COASTAL CONSERVANCY

Staff Recommendation
September 25, 2008

SEA OTTER RECOVERY PROJECT
COASTAL CONTAMINANTS AND ANTHROPOGENIC STRESSORS STUDY

File No. 08-079-01
Project Manager: Neal Fishman/Carol Arnold

RECOMMENDED ACTION: Consideration and possible authorization to provide up to $224,960 to the Regents of the University of California, Santa Cruz Campus, to undertake a study to determine the impact of coastal contaminants and anthropogenic stressors on sea otter recovery

LOCATION: Southern Monterey Bay and ocean waters off the Big Sur coast, Monterey County, California (Exhibit 1: Project Location and Site Map).

PROGRAM CATEGORY: Coastal and Marine Resources

EXHIBITS

Exhibit 1: Project Location and Site Map

Exhibit 2: Photographs

Exhibit 3: Project Letters

RESOLUTION AND FINDINGS:

Staff recommends that the State Coastal Conservancy adopt the following resolution pursuant to Sections 31220 *et seq*. of the Public Resources Code:

"The State Coastal Conservancy hereby authorizes the disbursement of up to two hundred twenty four thousand nine hundred sixty dollars ($224,960) to the Regents of the University of California, Santa Cruz Campus (UCSC), to undertake a study to determine the impact of coastal contaminants and anthropogenic stressors on southern sea otter recovery, subject to the condition that, prior to the disbursement of any funds, UCSC shall submit for the review and written approval of the Executive Officer of the Conservancy a work program, including scope of work, budget and schedule."

Staff further recommends that the Conservancy adopt the following findings:

"Based on the accompanying staff report and attached exhibits, the State Coastal Conservancy hereby finds that:

1. The proposed project is consistent with the Project Selection Criteria and Guidelines, last updated by the Conservancy on September 20, 2007.
2. The proposed authorization is consistent with the purposes and objectives of Chapter 5.5 of Division 21 of the Public Resources Code, regarding Coastal and Marine Resource Protection."

PROJECT SUMMARY:

This project will result in the completion of a study investigating the impact of coastal contaminants and anthropogenic (human-caused) stressors on southern sea otters (also known as California sea otters) to identify factors preventing sea otter populations from expanding to optimum levels. The study will be conducted by a team of researchers overseen by the University of California at Santa Cruz (UCSC).

A subspecies of *Enhydra lutris*, the southern sea otter (*Enhydra lutris nereis*) currently inhabits near-shore marine environments from San Mateo to Santa Barbara Counties. (Exhibit 2: Photographs). Due to a variety of factors, sea otters are highly susceptible to marine contaminants. One reason is the amount of food their high metabolisms require each day – about 25% of their body weight - and the fact that their diet consists primarily of mussels, clams, abalone, crabs and sea stars. These food sources are filter feeding benthic invertebrates known to accumulate toxins in their body tissues.

Southern sea otters were hunted to near extinction in the early part of the 20th century, but currently number between 2,000 and 2,700 animals. Listed by the federal government as a threatened species in 1977, the population has not rebounded to the levels originally projected - around 13,000 animals. In recent years, a disproportionate number of sea otters have died prematurely or have experienced low birth rates, both of which are contributing to the stagnation of the population. The causes of early mortality or low birth rates are not well understood, but necropsy studies suggest that a high percentage of sea otter deaths are the result of infectious diseases, parasites and toxins many of which stem from human-related activities. For example, the parasite *Toxoplasma gondii* is a potentially lethal agent that causes brain infections in otters and is carried in cat droppings. Urea in fertilizers may be another factor.

The proposed three-year study will compare two populations of sea otters, one inhabiting southern Monterey Bay where runoff from urban development and agriculture impacts water quality. The other population inhabits cleaner waters off the coast of Big Sur. Forty otters from each population will be captured and examined. Radio transmitters will be implanted from which a variety of data will be collected using state-of-the art telemetric methods. Rigorous necropsies and cause of death analyses for all study animals that die during the course of the study will be performed, and the results from each population compared. The data will be used to more clearly establish whether marine contaminants and human-caused stressors are negatively impacting sea otter health, with the goal of developing management strategies to counter these impacts.

As a sentinel species in the marine food chain, sea otters reflect the overall health of the environment they inhabit. While the primary focus of the study is to support a more vigorous sea otter recovery, it is likely that any management strategies developed as the result of this study will improve the overall marine environment of California's central coast.

UCSC operates the Long Marine Lab and will utilize this resource for data analyses and other aspects of the study. The study team consists of experts in ecology, evolutionary biology and marine wildlife. It includes researchers from both UCSC and the University of California at Davis, as well as the Department of Fish & Game, the U.S. Geological Survey and the Monterey Bay Aquarium.

Site Description: Southern sea otters are currently found in the ocean waters off the California central coast from Point Conception in Santa Barbara County to just below Half Moon Bay in San Mateo County. Otters inhabit rocky, sandy, and mixed shores, but are most common along rocky shores with large kelp beds. They are generally found in water depths of 65 feet or less, facilitating foraging along the ocean floor.

For purposes of this study, two populations of sea otters will be examined, one in southern Monterey Bay and the other in Big Sur. Chosen for their differing on-shore land uses and corresponding run-off characteristics, these two areas offer the opportunity to make comparisons regarding the potential impact of human activities on each population. Southern Monterey Bay fronts fairly extensive human development, including residential, commercial and agriculture. The Big Sur coast, on the other hand, is largely undeveloped, consisting of expansive protected lands and ranchlands.

Project History: In the 1700s, sea otters (*Enhydra lutris*) ranged from Baja California along the west coast of the United States into Alaska and around the Pacific to the eastern coast of Russia and down into Japanese waters. Relentlessly hunted for their luxuriant fur, by the early 1900's southern sea otters (those previously found from Baja California to the Pacific Northwest) were believed extinct. In 1938 about fifty animals were unexpectedly discovered along the Big Sur coast.

In 1972, Congress passed the Marine Mammal Protection Act prohibiting the taking of any protected marine mammal, including the southern sea otter. In 1977, the animal was placed on the federal endangered species list as a threatened species, and in 1982, the U.S. Fish & Wildlife Service released a sea otter recovery plan. At that time, resource managers predicated that the southern sea otter population would rebound to about 13,000 animals. Throughout the 1980s and early 90s, the population grew at a healthy rate of about five to seven percent a year and by the mid-1990s population levels had reached about 2,000 animals. Shortly thereafter, however, managers noted a worrisome slow-down in population growth, and in more recent years, no growth at all.

An inordinate number of premature deaths combined with an unusually low birth-rate are contributing factors to otter population stagnation, but the exact causes of these phenomena are unknown. Various studies point to marine contaminants and human-induced stressors as potential contributors, including run-off that contains cat droppings, urea from fertilizers and other toxic substances. These studies focused on individual deceased animals found at varying locations. None have compared data collected from otters that inhabit two separate marine environments, one relatively more polluted than the other.

Concerns about stagnation of the sea otter population prompted environmental groups to lobby for legislation to address this problem. In 2006, the California legislature passed AB 2485 which focuses on sea otter mortality. Among other provisions, this bill makes recommendations regarding, or prohibits the disposal of substances known or believed to have deleterious effects on fish, plant life, mammals or bird life in state waters. Additionally, the bill established the California sea otter tax check-off fund (see Project Financing below) to allow taxpayers to easily contribute to funding solutions to this problem.

PROJECT FINANCING:

Coastal Conservancy	$224,980
U.S. Geological Survey	180,000
Department of Fish & Game	100,000
Monterey Bay Aquarium	220,000
University of California at Davis	25,000
Total Costs:	**$749,980**

The anticipated source of Conservancy funds for this project is the fiscal year 2008-2009 appropriation from the California Sea Otter Fund. Established in 2006, the California Sea Otter Fund is an income tax check-off program the funds from which are to be used to facilitate southern sea otter recovery. Specifically, the funds may be used for research and programs related to improving the near-shore ocean ecosystem, including, but not limited to, program activities to reduce sea otter mortality. The programs may also address pathogens and water and wastewater treatment technologies. (Revenue & Tax Code Section 18752). This project is consistent with the requirements of the California Sea Otter Fund in that it will focus on the impact of contaminants and other anthropogenic stressors on southern sea otter recovery in order to identify management strategies to counter such impacts.

CONSISTENCY WITH CONSERVANCY'S ENABLING LEGISLATION:

This project would be undertaken consistent with Division 21, Chapters 5.5 (Coastal and Marine Resources) of the Conservancy's enabling legislation (California Public Resources Code Section 31220).

Pursuant to Section 31220, the Conservancy may award grants to public agencies and nonprofit organizations for the purpose of undertaking coastal and marine water quality projects. Under Section 31220 of the Public Resources Code, the Conservancy may undertake projects that meet any of the objectives specified in subsection (b) of that section. Consistent with Section 31220(b)(5), the proposed project will provide for monitoring of marine wildlife, in order to facilitate the protection and enhancement of resources within the coastal zone. Consistent with this section, the project will result in the completion of a study to identify impacts of contaminants and anthropogenic stressors on sea otter health and mortality with the goal of reducing such impacts.

The Department of Fish and Game has been consulted with regard to this project, as required by Section 31220(b)(5). As required by 31220(c) the project will result in an evaluation of sea otter

mortality and is consistent with adopted state and regional watershed planning as described below under "Consistency with Local Watershed Management Plan/State Water Quality Control Plan." Finally, as required by Section 31220(a), Conservancy staff has consulted with the State Water Resources Control Board in the development of this project in order to ensure consistency with the Clean Beaches Program under Chapter 3 of Division 20.4 of the Public Resources Code.

CONSISTENCY WITH CONSERVANCY'S 2007 STRATEGIC PLAN GOAL(S) & OBJECTIVE(S):

Consistent with **Goal 6, Objective 6A** of the Conservancy's 2007 Strategic Plan, the proposed project will result in the completion of a study to evaluate the effect of nonpoint source pollutants on sea otter health and mortality to enable informed planning for watershed improvements that will contribute to sea otter recovery.

CONSISTENCY WITH CONSERVANCY'S PROJECT SELECTION CRITERIA & GUIDELINES:

The proposed project is consistent with the Conservancy's Project Selection Criteria and Guidelines, last updated on September 20, 2007, in the following respects:

Required Criteria

1. **Promotion of the Conservancy's statutory programs and purposes:** See the "Consistency with Conservancy's Enabling Legislation" section above.
2. **Consistency with purposes of the funding source:** See the "Project Financing" section above.
3. **Support of the public:** This project is supported by the Universities of California at Santa Cruz and Davis, Congressman Sam Farr, Assemblymen John Laird and Dave Jones, the Marine Mammal Commission, the California Regional Water Quality Control Board, the Department of Fish & Game, the U.S. Fish and Wildlife Service, the U.S. Geological Survey, the National Oceanic and Atmospheric Administration, Monterey Bay Aquarium, Defenders of Wildlife, the Ocean Public Trust Initiative, Friends of the Sea Otter, and the Central Coast Long-Term Environmental Assessment Network. Project letters are attached as Exhibit 3.
4. **Location:** The study area is offshore within southern Monterey Bay and Big Sur. Both Monterey Bay and Big Sur are within the Coastal Zone.
5. **Need:** Funds for this project will be derived from monies appropriated to the Conservancy from the Sea Otter Recovery Fund. On its own, UCSC does not have sufficient funds to undertake this study.
6. **Greater-than-local interest:** The southern sea otter is a federally listed threatened species the recovery of which, like all threatened and endangered species, is of great importance to human populations around the world. In addition to its biological significance, the southern sea otter and other visible coastal wildlife attract millions of tourists to the central California coast where, due to the animals' habit of feeding relatively close to shore, there are many opportunities for viewing.

Additional Criteria

7. **Urgency:** The southern sea otter is the subject of much concern by resource managers due to the fact that the population is not rebounding to optimum levels. If current trends of premature death and low birth rates continue, species recovery will be jeopardized. This study is an important step in determining the cause of sea otter population stagnation.
8. **Leverage:** See the "Project Financing" section above.
9. **Innovation:** A side-by-side comparison study of two California sea otter populations, one in a clean environment and the other in a polluted one, has never been undertaken before. Using innovative, state-of-the-art monitoring techniques, sea otter health and ecology and their near-shore habitat will be examined at an unprecedented level of detail.
10. **Readiness:** UCSC and other team members are ready to move forward with this project. All necessary permits have been obtained. The study would begin in the Fall of 2008.
11. **Cooperation:** This research project is a cooperative effort between various resource agencies and organizations to determine the cause of increased sea otter mortality and low birth rates with the goal of enhancing sea otter recovery.

CONSISTENCY WITH LOCAL WATERSHED MANAGEMENT PLAN/ STATE WATER QUALITY CONTROL PLAN:

In a letter dated May 15, 2008, Roger Briggs, Executive Officer of the California Regional Water Quality Control Board, Central Coast Region, states: "The information gained from the [study of the consequences of coastal contamination and anthropogenic stressors for sea otter recovery] research activities will undoubtedly advance our understanding of threats impacting ocean health and provide science-based solutions for proper stewardship of our oceans. The Central Coast Regional Water Quality Control Board is charged with regulating sources of discharge to surface and ground water in the Central Coast. The proposed research activities will help us understand how best to regulate discharges in a way that will reduce impacts of these stressors to marine mammals and to protect the overall health of ocean waters…The proposed project will provide important data for making wise decisions associated with regulatory and management programs for protection of water quality" (Exhibit 3). Data gathered as the result of this study will be used by the Regional Water Quality Control Board to inform plans addressing nonpoint source contaminants in central coast marine environments.

COMPLIANCE WITH CEQA:

The proposed project is categorically exempt from review under the California Environmental Quality Act (CEQA) pursuant to 14 California Code of Regulations Section 15306, which exempts basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious major disturbance to an environmental resource as part of a study leading to an action which the Conservancy has not yet approved, adopted or funded. This project will not result in a major disturbance to sea otters as evidenced by the review process outlined below.

Although sea otters are a federal-listed threatened species, the relevant regulatory agencies have determined that this research study will not result in a serious major disturbance to the animal. These agencies have therefore approved all necessary permits for the project to proceed. The U.S. Fish & Wildlife Services has issued what is known as a "Recovery Permit" for this project which allows for capturing, handling, instrumentation, bio-sampling and observation of wild sea otters. The USFWS considers permit issuance to qualify for a categorical exclusion under the National Environmental Protection Act, per Department of Interior Guidelines. The California Department of Fish & Game has entered into a Memorandum of Understanding with UCSC which recognizes the USFWS permit in lieu of a separate permit from DFG for conducting research on a species of special concern such as the southern sea otter.

Upon approval, staff will file a Notice of Exemption for this project.